

Still Alive With Sir Clive!

# ZXir QLive Alive!

The Timex/Sinclair North American User Groups Newsletter

Volume 11 No. 3

Autumn 2001

## MEMORY MAP

<u>ADDRESS</u>	<u>ROUTINES</u>	<u>ADDRESS</u>	<u>FILES</u>
2	Information and Chairmen — Treasury Note\$	8	Trials & Tribulations – Don Lambert
3	<i>Input/Output</i> — by <i>Abed Kahale</i>	10	The Font
3	ZX-81 on Sale	10	True Type Fonts – David Solly
6	Union City Man - Tim Swenon	12	Emulators
7	ZX-96 - Kai Fischer	15	The Z88 Source Book
8	Structured SuperBASIC	19	Unclassified Ads



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Established 1991 The Timex/Sinclair North American User Groups Newsletter

# T/SNUG Information

We wish to support the following platforms:  
ZX-80/81, TS-1000, Spectrum, TS-2068, Z88  
and QL. If you have any questions about any of  
these fine Sinclairs, contact the:

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## *ZXir QLive Alive!*

Is the newsletter of T/SNUG, the Timex/Sinclair North  
American User Groups, providing news and software sup-  
port to the T/S community in a VOLUME of four  
newsletters per year; beginning with the Spring (March)  
issue.

T/SNUG's main goal is to preserve and  
encourage the use of Sinclair computers by  
providing an open forum for the exchange of  
knowledge, building and maintaining of  
software libraries. Providing vendors, repair  
service and members with free ad space.

It is the user groups and individual subscribers, rather than the  
vendors, that provide the pecuniary support for this newsletter.  
Vendors and developers receive this newsletter free of charge,  
though contribution from vendors and user groups is gratefully  
accepted. Please support our vendors and service providers  
whenever possible.

If you have a problem or you have solved a problem, please share  
it with the rest of us. No problem will be considered  
unimportant.

## **Editor/Treasurer/Publisher**

You can keep T/SNUG alive by an annual contribution of  
\$12 for one VOLUME made payable to Abed Kahale.

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## **Article Contributions**

Send in your articles and inputs by disk, hardcopy mail, or e-mail to:—

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E-mail: AKahale@compuserve.com

## **WEBPAGES**

<http://users.aol.com/clubbbs/tsnug/>  
<http://www.outlawnet.com/~jboatno4>  
<http://www.unixville.com/2068>  
[ql-users@nvg.ntnu.no](mailto:ql-users@nvg.ntnu.no)

## **Trea\$ury Note\$**

As of September 29, 2001, we have a balance of \$497

# Input/Output

by *Abed Kahale*

## Sinclair ZX81 computers back on sale

### TIMEX/SINCLAIR ZX-81 REAPPEARS ON THE PERSONAL COMPUTING SCENE

An obsolete British home computer, the Timex/Sinclair ZX81, has made an unexpected and daring reappearance onto the personal computing scene, thanks to a retro computer reseller in the US.

The unique piece of computer nostalgia, created by English computing pioneer Sir Clive Sinclair and first marketed in 1981, heralded the beginning of a new era by establishing a place for computers in the home.

The ZX81 may have difficulties competing with the latest computer hardware, however. The machine features a modest Z80 processor running at 3.25 MHz with just 1K of RAM and 8K ROM as standard.

New York firm Zebra Systems has a warehouse full of Timex/Sinclair ZX81s and claims that the computers are proving a hit not just with nostalgic gadget geeks. The computers apparently still have a practical purpose in the high-tech world of modern computing. The company's home page boasts an endorsement from one Nasa engineer: "Send me four more kits, I'm using them as controllers for a project."

The Sinclair ZX81 costs \$99 (£68 -- roughly the same as they did in 1981) but are sadly not available outside the US.

11:18 Friday 6th October 2000

**Will Knight**  
www.ZDNet.co.UK

Peter Liebert wrote a very nice thank you note to me and stated the way he and his friends were going to use Z88 and the supporting materials. That's what I wanted-somebody to use it.

**Joan Kealy**  
hjkealy@hilconet.com

Abed,

I will be exhibiting my Sinclair collection at the 5th Vintage Computer Festival in San Jose in September. Because I'm on the list to exhibit, the VCF folks appointed to me when a reporter from a local newspaper wanted a

local angle on the VCF. So this past Sunday, there was a nice article (with picture) of me and my collection. I deleted the article off of their web page, so I can send it along if you like.

**Tim Swenson**  
swensont@lanset.com

Abed,

I got on ZDnet UK, otherwise known as [www.zdnet.co.uk](http://www.zdnet.co.uk) and discovered Rupert Goodwins' Diary. He has several chunks of his diary available from 1999 and 2000. I haven't found anything for 2001 but I would like to direct your attention to his diary for 26/10/1999 and 6 Oct 2000. In the first, he tells how he became enchanted with the ZX-81 and Spectrum and in the second, he tells us that (as of last year) ZX-81s are still being sold by Zebra Systems!

All I had to do was a search on ZDnet, then on Sinclair. Try it, he writes as only a Britisher writes.

**John Donaldson**  
goodolejohn@avenew.com

"Dear Mr. Lambert:

About a year ago I read a reference in ZQA! to a "TXROM" for the Sinclair ZX-Interface-1. This would make it work in "Timex mode" without a Spectrum emulator. Please tell me how to get one of these. Thank you,

**Leon Howell**

## Where do I get more ZX Microdrives?

Abed,

I wrote and told Mr. Howell that I don't know anything about the TX-ROM. I also don't know where to get the microdrives ( I believe he refers to the tape cartridges.). I also referred him to Jack Boatwright since Leon is in Bend Oregon.

Abed for your information I scanned all the issues of ZQA! that I have and found a request for information by Leon in the Autumn 2000 issue on page 4. Timex Sinclair still lives.

**Don Lambert**  
dslambert@email.msn.com

Back again Abed,

About Leon's question: is it possible that he has a Portuguese computer? From reading his letter in 2000 issue it isn't stuff that you would find on a true US T/S 2068. He really didn't give too much information. The twister board is a clue that it isn't what we used. That and a Timex Disk system.

Timex never got a disk system into the US that I know of. Or is it a Spectrum?

**Don**

I received and replied to the same request from Mr.

Howell. I did search the Input/Output pages but to no avail. So here is his request again. **Abed**

# Anyone???

**I have a ZX-Interface-1 and one microdrive. Where can I get a TX ROM to use it in the Timex mode?**

(I don't want one of those dual ROMs with Spectrum and TX modes)

**Will it work with Timex disk system? I would like to be able to copy a file from any disk, mdv or scp to any other disk, mdv or scp with a single command line.**

**Leon Howell**  
6150 Monument Dr. #2  
Grants Pass, OR 97526

Abed,

I've returned to work after 8 months off rehabbing (sp) my shoulder as the last repair of my 12 foot fall last Nov. I'm currently in the midst of gathering preliminary info to purchase the only gas station in our little burg of 351 people. I've received no requests for hdw/sw from the Iowa warehouse since your last issue. Hope this finds you in good health.

**J. Shepard**  
jshepard@wccta.net

Hey Abed my good friend !!!!

I was a former subscriber of your T/SNUG magazine or publication, how much does it cost to subscribe, I would like to join once more.

Hey, I am considering starting a Sinclair Magazine myself too. It will include all Sinclair brand name computers. and will have 10 double sided pages.

I'm trying to restart a full fledged Sinclair magazine like there once was a long time ago.

It will focus on hardware & software issues and the hardware projects will use the latest new technologies and chips to improve the performance of the ZX81.

Please let your subscribers know about my idea and please e-mail me the price to subscribe to T/SNUG.

**Jose Moreno**  
Jose55@bellsouth.net

Hello Mr. Kahale,

I was surfing the Internet today and decided to type TS2068 into Yahoo!

Search to see if there was any information online. Wow, what a surprise I got!! There's more interest than I thought!

I started out with a ZX81 way back in the '80's and

then moved up to a TS2068 when it came out. I still have the ZX81 although it doesn't seem to be operational anymore; I'm not sure what's wrong with it. However, my TS2068 looks as good as the day I took it out of the box. Around 1988/89 I bought a 3.5" disc drive for it as well.

I'm amazed at the continued interest in these computers!! I haven't used my TS2068 in a few years, but I think I'll get it out again and have at it!!!

I loved this computer and spent many hours writing programs back in the '80's. It's great to see that it's still alive!

**Jeff**  
millward@telusplanet.net

Dear Mr. Kahale,

I was interested to see your note on the QL-users' list. Is the "ZXir QLive Alive" generally available to users of the QL? If so, please may I be put on the circulation list?

Yours faithfully,

**Paul L. Harris**  
2 Tippetts Close, Enfield,  
Middlesex, EN2-0QR U.K.  
frs15@frs15.t9.co.uk

Hi Abed,

You will find a renovated start page of

<http://www.zx81.de>

and then follow the link to ZX-TEAM-MAGAZIN. Enjoy

**Peter Liebert-Adelt**  
P.Liebert@t-online.de

I've multi addressed this to help my response time since it seems I may have dropped the ball way back in '99 for Mr. Burrell. I can only hope not. Anyway, in response to a request of info on the warehouse to Mr. Leon Howell, I was going to refer him to the T/SNUG web page. In doing so, I found that the ZXir QLive Alive! issue gained by clicking (as suggested) on the nice picture of Abed's is the Spring '99 issue. (Why not current??) What is embarrassing to me is Mr. Burrell asking the editor about his plight of having blown his SCLD and Abed suggesting that Jay Shepard could perhaps take care of that. I don't remember Jeff ever requesting a 2068 from me. Did you get one Jeff? If not, I have plenty! I sorry this is sooo late.

On another aspect of the web page: 1) how do I update my email address, since Abed shows my current in ZQA I just thought it would be on the site, I guess I should have told the webmaster. Who is that? 2) shouldn't the site be advertising Jack and my warehouse stuff? One of the 'links'? Having a good rainy, but cooler Labor Day,

**J Shepard**  
jshepard@wccta.net

*On my 71<sup>st</sup> Birthday,  
Sept. 1<sup>st</sup>*

I decided to resurrect my TS2068 with the Zip drive. The setup with the LarKen Drive will have to wait till I re-master my earlier version. Believe me, after over 5 years of playing Idiot's Delight mousing around with a Graphic Interface, my idiocy was virtually complete. Not only was a keyboard difficult, but I could not remember how one started up with the disk drive blaring away.

# Happy Birthday

The TS2068 did not fail me. The picture came up in color bright as ever. You remember that the same vintage Apple II had no color, no sound, no on-screen editor as you wrote your Basic program?? No blinking question mark; you just attempted to run the program; it would not run, you searched with no clue and certainly no hint from the Apple II. This was a time before the ascendancy of Microsoft.

TS2068 did not fail me but my memory did. I had to blunder about trying to remember how one got through the 4 layers of meaning for every key, holding down this one, then that combination of shifts, caps, symbol shift. None of it came back to me at a rate that would discourage a diagnosis of Alzheimer's. Me, not the Tessie—it was astonishingly agile for a machine that dated from what—1984? Probably '83. You recall how we can't get our iMacs out of the box before the color is obsolete and disgracing our desktops? The feeling was not that my iMac was blowing this machine away. Lordy, I do wish someone had written an emulator for TS2068 to Apple Macs. A Spectrum, yes, but the Spec was never even a feeble cousin to the Tessie2068.

After turning off and on repeatedly because I could not recall how to go back to the disk catalog, I finally dazzled myself with perspicacity and said, "Ah! Ha!, "Start" program, listed that out and realized a "LOAD \* "Start" would do it. Of course, part of the problem is that the procedures learned for tape loaded programs, Zip driven programs, and LarKen driven programs were different. Hey, can you recall when we kept 3 different sets of procedures in our heads at once instead of mousing an arrow at what we wanted to open next? One-handed no-brainer.

Can you remember when we wrote programs for whatever we wanted to do—whether it be playing music with chords in a host of different octaves, or making up a program to average grades, weight tests, and following the school district's exact formula for the 6 week grade? The school brass thought I was a "hacker" back when that meant aging whiz kid instead of intruder.

I played several games and listened to music. This was one very advanced little computer at its debut. You recall TS and a host of small computer manufacturers were scared out of the field by a PC JR? That piece of crud? Gone in a year never to be resurrected. We have kept our little orphan computers going nearing 20 years now.

Remember..... first you have to plug it in.

**Joan Kealy**

[hjkealy@rionet.org](mailto:hjkealy@rionet.org)

John;

If I am not mistaken, you did indeed help me. I purchased a TS2068 from you (the RF modulator is inop, but I prefer a composite monitor anyway). Both Abed and you were most helpful in this matter.

**Jeff Burrell**

[JBurrell@endocardial.com](mailto:JBurrell@endocardial.com)

---

I really would like to support your work with an article. Please tell me what you think, ZQA! readers would like to read about our activities from this side of the ocean.

Perhaps you will find some questions to ask me, when you look at ZX-TEAM-homepage:  
<http://www.zx81.de>

Kai has prepared several pages about ZX96 in English language and I have uploaded some very short English summaries of ZX-TEAM-MAGAZINE

<http://home.t-online.de/home/p.liebert/magazine.htm>

**Peter**

---

Hi:

I recently dusted off my 1988 Z88 that was originally used as a laptop to bring information to my Mac Plus desktop. I want to use it again with my Mac PBG3 laptop. But, I find that OS 8.6 and perhaps a single serial port for both printer and external modem have conspired to make the 1988 software version 1.1 of Z88 to Mac obsolete!

It still works on a Mac PB 145 or 190 with OS 7.0x but I am not sure if the OS 7.5, 8.0, 8.5 or 8.6 can work with it. If not, or if the hardware is the problem, do you know of a fix? Regards,

**Dick Tryon** in Frankfort, MI

[rtryon@bignetnorth.net](mailto:rtryon@bignetnorth.net)

---

I have had the Mac-Spec emulator—I want a TS2068 to Mac emulator. Also had ZX Loader. As I stated, my affection for Spectrum is minimal. I decided that was not worth the space on my Mac. But you are kind to try to help. Now write a TS2068 to Mac, please. I wonder if there is anyone in our organization that could??

The UK people liked the Spectrum, but it was nowhere near half as good as the Timex Sinclair 2068. I had just about everything worthy from Europe on my LarKen or Zip drives with Spectrum emulator—it would have been about 1 disk full.

I am still mad at IBM for bringing out the PC Jr. like it was going to be so great. All it did was kill other American small computer companies. They should not have cut and run, but IBM was such a monster before Microsoft cut in.

**Joan**

---

Hi all,

Thanks for the effort. I did not intend to say that I have a Mac Plus with OS 8.6! That OS is on the PBG3 with just one serial port for both modem and printer. I suspect that the OS knows that but the Z88 to Mac application does not! So, the app runs on a PB 145 with OS 7.1, but not on the PBG3 with OS 8.6. How can I do it is the question. Right now I can use the PB145 as an interim step, but that is slow and tedious. Regards,

**Dick**

---

Abed,

I have OS 8.5.1 on my 6100. I find that it works fine with Maclink version 1.0. I have the cable plugged into the modem port. It could be that it does not work with Mac OS 8.6. Or there could be a problem using a single serial port. It may need a different cable.

**Dave Bennett**

[dave975@att.net](mailto:dave975@att.net)

---

Dave Bennett's reply below sounds very plausible. I suggest that you first try to clean all connectors or replace

the cables as he suggests.

Another way would be to plug and un-plug the cables several times. (with the power off)

This is a common problem with long time out of use electronic equipment.

Abed

Hi Abed,

Thanks for the clues. I agree that the problem is not the OS 8.6 now that I hear that it works on OS 8.5 on a Mac 6100. But, it takes an early version of MacWrite II or earlier and it takes a Mac with a separate serial port for an external modem.

The Mac PBG3 of my vintage seems to have just one combination phone/printer port and apparently the Z88 to Mac software never had to deal with that. It remains for me to find a way to get the combo port to split into two - one phone and one printer? Or perhaps Apple has a system patch that lets me switch which one is in play when I want to Z88 to talk? I am not sure that Apple ever does that sort of thing? Regards,

Richard R. Tryon  
rtryon@bignetnorth.net

Hello,

Sorry for my English. Have you a **ZX81** to order for me? Or can you order a ZX81 from Zebra System please. I live in Germany. My address is:

Uwe Schönewolf  
Liegnitzer Str. 1

Germany - 34123 Kassel

Thanks for message. Uwe Schönewolf  
U.Schoenewolf@Web.de

I wrote Zebra System, waiting on reply, Abed

## Union City Man Conveys His Love For Computers

By Kenneth Lim Correspondent

UNION CITY -- Today marks the 20th anniversary of the IBM personal computer, but when **Tim Swenson** chose his first computer in 1981, the IBM never entered his mind.

"The IBMs were too expensive. I could choose between the Vic-20, Tandy or Apple," Swenson said, recalling the computer brands from his high school days. "Then I saw the Sinclair **ZX81**, which was only \$200, and I knew that was what I wanted."

"Although the IBM and its clones marked a new phase in home computing, the IBM was not the first home computer. Few now recognize the Sinclair computers, and even fewer own and use Sinclairs.

Swenson, 37, is a collector of vintage computers -- computers that no longer are manufactured. His collection includes an almost-complete series of the Sinclair computers, produced from 1979 to 1988.

Swenson also has many other old computers and peripherals, including a Commodore 64, an Atari and software cartridges that were popular with computer users in the late 1970s and '80s.

While many of those users have replaced their old machines with newer, faster and more powerful ones, Swenson has kept a special place in his heart -- and his garage -- for the Sinclairs.

Sharing a table with an Internet-enabled PC is the "pre-Web" Sinclair **QL**, a 1986 model that Swenson occasionally uses to write computer programs.

Between those computers sits Swenson's favorite -- an "updated" **QL** model called **Q40** with a processing speed of about 40 megahertz, about 25 times slower than today's 1-gigahertz PCs.

Swenson also has a **Z88**, a laptop-sized precursor to the palm-sized personal digital assistants, which Swenson prefers to heavier laptops.

"It doesn't take forever to boot up," Swenson said as the machine came alive after he inserted four AA batteries. Using laptops, it's a problem with different electrical systems overseas," he added. "But anywhere you go, you can get AA batteries."

Swenson, who is vice president of the Union City Historical Museum, knows the history of every one of his Sinclairs. He also used to write a newsletter for the **QL** -- "**The QL Hacker's Journal**" -- that he distributed to other **QL** fans he knew.

Swenson, who will exhibit his Sinclairs at San Jose's Vintage Computer Festival next month, said he first saw a vintage computer collection at a computer festival in 1989 and was inspired to start his own. He estimates that only about 30 people still use Sinclairs in the United States, but there are 60 or 70 in Britain, where the Sinclairs were first produced.

Compared with current off-the-shelf PCs that are used for almost any purpose in homes and offices, Swenson said high-priced home computers in the early 1980s were used mainly by hobbyists for programming.

But now those computers usually are not expensive. Flea markets and Ham festivals -- electronic flea markets organized by amateur radio operators -- were good places to find old computers, Swenson said. Most owners were happy to get rid of their old computers when they got newer ones.

"I remember I had a neighbor with an old Mattel Aquarius and I offered her \$10 for it," Swenson said. "She had to choose between a computer she didn't use and \$10. It didn't take her long."

Much harder to find are the computer parts, which often no longer are sold. So the thought of damages worries Swenson.

"Once I was in my car ... it slipped down an embankment and hit a redwood tree," Swenson remembers. "The first thing in my mind was 'Is the Sinclair all right?'"

"I can get replacement parts for myself in the hospital, but I don't have any for the Sinclair."

For Swenson, collecting vintage computers is similar to other hobbies -- such as collecting records or old cars. These computers can still be used, it's just what you use them for," he said. "I use my PC when I need the Internet, but when I'm programming I still enjoy the **QL**."

Nostalgia is an important part of the hobby. "Many collectors are hitting their 20s and 30s, and many of them miss the old games and systems they used as kids," Swenson said.

Then there is the pride factor. "Sometimes people tell me their first computer was a 386," Swenson said, referring to a 1985 processor for the PC. "I was there before that."



# ZX96 - A Professional System Based On The ZX81

- **ZX96 Main board.**
- **ZX96-Giant memory expansion.**
- **Bus driver board.**
- **Floppy disk controller.**
- **Multi-IO-board.**
- **AT-keyboard IF**
- **LCD-controller.**
- **Hard disk-IF.**
- **Megabyte board.**
- **Memory map.**

The following noticeable advantages to the original ZX81 are present in the ZX96 System:

1. Contact-secure bus system (DIN 41612, 64 Pins) .
2. A regular standard AT computer keyboard.
3. Memory expansion possible when more memory is required.
4. A modern mass storage concept (floppy disk and fixed disk) .
5. Instead of a TV a LCD screen can be used.
6. Multiple I/O ports (parallel/serial).

A look inside reveals the amount of work spent on the system.

The base of the system is the ZX81 or ZX96 which is enhanced by the Giant-Expansion and the Poke Board. It is connected to the internal bus using a Driver Board. This unit allows for the connection of a ZX81 compatible matrix keyboard, a monitor and a cassette recorder.

A View of the ZX96 main module with the ZX-PCB, the Giant and Driver additions.

The first expansion is a Floppy controller for single-sided 80 Track 3.5" Floppy Drives. (160KB capacity per floppy disk).

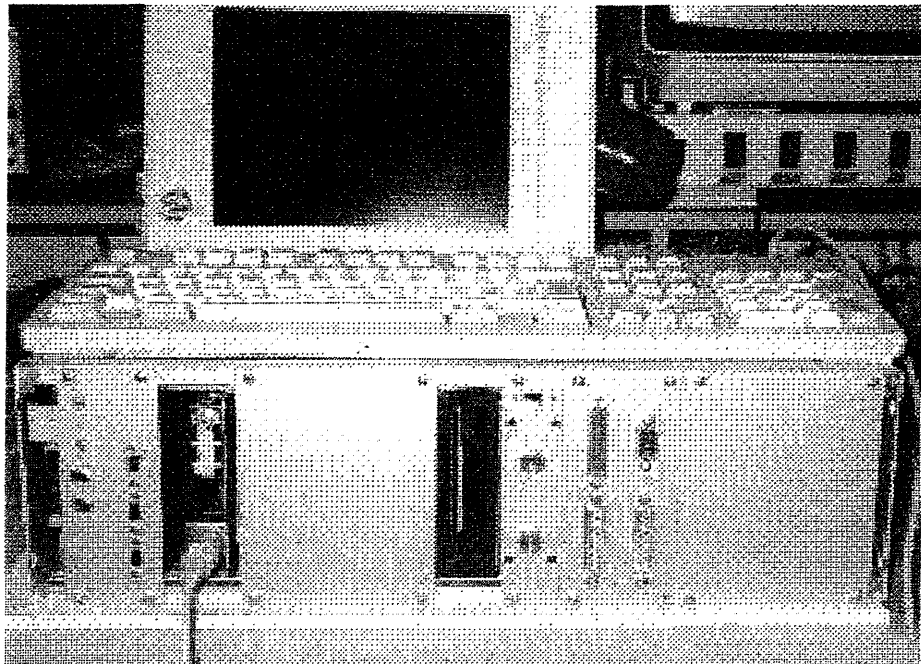
An AT keyboard can be connected to a special Interface, which also includes an additional video output as well as a TV modulator. (The modulator was originally placed on the Poke Board, but had to be removed to allow for more board space.)

All I/O ports are present on the Multi-IO Board: Centronics, RS-232 and four additional ports with user programmable baud rates.

If the 144 KB of memory on the Giant Board are not enough, Megabyte Board can allow for expansion up to an additional 4 megabyte of static RAM.

The LCD screen is controlled by a custom LCD-Interface, which offers additional possibilities: because there is space left on the edge areas of the display screen, these are as can be used for displaying system status information.

The Hard disk Interface can be used to control a regular IDE Fixed Disk Drive. A comfortable special DOS called MEFISDOS with a full-screen editor leaves very



little to be desired.

Finally a more in-depth view of the ZX96, as in the back of the picture the Backplane Board is situated.

We have professional PCBs for all of the above extensions in a really good quality (160x100mm). Please have a look at the price list. 07/01

**Kai Fischer**

Rauner Str. 2B

D-09366 Beutha, Germany

www.zx81.de kai@zx81.de

You've been invited to join the TS2068 group, an email group hosted by Yahoo! Groups, a free, easy-to-use email group service.

By joining TS2068, you will be able to exchange messages with other group members. Yahoo! Groups also makes it easy to store photos and files, coordinate even TS and more. Here's an introductory message from the group moderator: Hello fellow Timex Sinclair 2068 hackers, Welcome to the TS2068 group on the Yahoo Groups service. This is a reincarnation of the 2068@unixville.com list that used to exist before April 2001.

To learn more about the TS2068 group, please visit <http://groups.yahoo.com/group/TS2068> -or- <http://www.timexsinclair.org/>

To start sending messages to members of this group, simply send email to [TS2068@yahoogroups.com](mailto:TS2068@yahoogroups.com)

If you do not wish to belong to TS2068, you may unsubscribe by sending an email to [TS2068-unsubscribe@yahoogroups.com](mailto:TS2068-unsubscribe@yahoogroups.com)

To see and modify all of your groups, go to <http://groups.yahoo.com/mygroups>. Regards,

**Louis Florit**

Moderator, TS2068

Your use of Yahoo! Groups is subject to <http://docs.yahoo.com/info/terms/>

# Structured SuperBasic 2.6.2

**S**tructured SuperBasic (SSB) is a program that takes SuperBasic programs written in the SSB style and converts them to full running SuperBasic programs.

Structured SuperBasic supports the following features:

- No Line Numbers
- Blank Lines Between Lines of Code
- Labels for GOTO's and GOSUB's
- Conditional Compilation (#IFDEF)
- Multiple Part Programs (#INCLUDE)

Structured SuperBasic programs are written in any text editor and converted with the SSB program.

**A**lthough Structured SuperBasic does add one extra step in going from writing code to a runnable program, it does give the programmer lots of extra features to make the programming process more structured. No line numbers and blank lines between code allows for an easier reading program. #INCLUDE statements allow the code to be broken up into smaller pieces and allows code reuse. No line numbers means that software management utilities, such as the Resource Control System (RCS) is easier to use.

**A**dded to SSB 2.6.1 is a second command line argument of Starting Line number. This allows SSB to use used with the Unix utility Make (Make comes with the C68 distribution). Also added is SSBGO, a utility that automatically runs SSB, load the program into SuperBasic, and calls Qliberator to compile the program. Designed to be used inside MicroEmacs, it can be used with any multitasking editor (just CTRL-C to SuperBasic and EXEC ssgo).

**U**ersion 2.6.2 fixes a few bugs in 2.6.1 and does not add any new features.

**S**tructured SuperBasic is a freeware program. It was compiled with Qliberator 3.36 and requires TKII. It is configurable with CONFIG and with Environment Variables (ENV\_BIN).  
[ssb262.zip \(44K\)](#)

## FileConfig

FileConfig is based on O. Fink's BasConfig program and automates its use. With BasConfig, you have to enter all of the Config Block information by hand. Make a mistake and you have to start all over again. Want to change a Config Block definition? With BasConfig you have to totally recreate it.

**F**ileConfig uses a Config Block Definition file. Once you create the file, just run FileConfig and your Config Block is created. If you need to change the structure of the Config Block, just edit the Definition file, rerun FileConfig and the new, updated, Config Block is created.

[filecfg.zip \(16K\)](#)

## Lynx

**L**ynx is an HTML (web) browser, ported to the QL by Jonathan Hudson. On the QL Lynx is only capable of looking at local files (no Net access).

This archive is a minimal installation of Lynx and will fit onto a single 720K floppy. I've written up a short "How To Use Lynx" article to get you going. This version will run on a QL with a Gold Card.

[lynx.zip \(281K\)](#)

---

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## The Trials and Tribulations of Reading an MSDOS Text File Disk !

Richard Matejovic

**T**his is from the January/February 1990 issue of CRAGIST newsletter. I was in correspondence with Richard for a while and all at once he dropped from sight and my letters to him were returned *forwarding address not given*. I never did learn what happened to Richard. What follows is what he sent me.

**B**efore I begin I would like to thank Bill Miller of SINKLINK for getting me involved with this project in the first place. I would also like to thank Mark Wahl also of SINCLINK C for writing the initial program that I used to get started in the right direction All I really did was debug Mark 1 8 program .

**O**ur story begins some time ago in a land far away (Ohio). One day I was talking to Bill on the phone (Much to my wife's dismay!) I was telling him that I had just gotten an AERCO disk drive System for my TS-

1000! After having had only cassette and stringy floppy this was new and ponderous for my poor little person to behold. In the course of our conversation Bill mentioned that I should try to read an MSDOS disk. He said that his system could read other disk made on other machines. So I thought sure I am game to give it a try. Well Bill sent me a disk to try. I also sent him one to try.

**A**fter playing around with this project on my own I had all but given up. By reading the AERCO manual and lots of trial and error (lots of error) I was able to determine that this was going to require some Machine Code programming skills. Since this was beyond my abilities, I thought "I will call Bill and see if he can be of any help!" Well Bill wasn't but he asked Mark about it and in a matter of a few minutes he was able to pound out a short program that he thought would work. However, since



he had no TS-1000 to try it on, back it came to me. I typed in the program and tried it. No go, nothing happened. The screen went blank and that was it. OK, I know the drive needs to be started. So I added line "700 RAND USR 12800". Now lets RUN the program, CRASH with error code "3/1100 subscript out of range". OK lets call Bill again. Unfortunately he was not much help. After some more playing around with the program I changed line 1000 to "FOR K=1 TO 40". It WORKED! !

**A**ll right lets see what all is on this disk. After 1 sector error 3/1100 AGAIN ! OK now variable "N" needs reset so add line "1085 IF N=SEND THEN GOTO 1160". And we were off again. This time it made 9 sectors before error 3/1100. I don't know about you but I was getting tired of the same error all of the time. The least it could do is come with something new! Anyway now variable "S" needs reset so add line "1015 IF S>9 THEN LET S=1".

**T**his brings us to where the program is today. It will still crash out with error 3/1100 when it comes across anything but text files, but I am working on this problem also. In the mean time if you do use it and it crashes just type in "PRINT PEEK K;" and "PRINT PEEK S;" and avoid these areas .

**I**would like to thank you for the time you have taken to read this article. You can be sure that I will be typing away on my *little toy computers* for many years to come .

**B**y the way if you are using a MemoTech Centronics Printer Interface then you should reverse lines 940 and 960.

NOTE: The lower case letters in the listing are inverse lettered.

```

70 PRINT
80 PRINT
90 PRINT  "WARNING warning
WARNING"
95 PRINT
100 PRINT "THIS PROGRAM WILL
CRASH"
110 PRINT "IF YOU DO NOT SET RAM
TOP BY"
120 PRINT "POKE 16389, 192 THEN
NEW"
130 PRINT "PRESS ENTER IF YOU
HAVE DONE SO"
140 PRINT
150 PRINT
160 PRINT "TO STOP THE PRINTOUT
PRESS BREAK"
180 PRINT "TO STOP THE DISK
DRIVE TYPE IN"
190 PRINT """"USR 12852"" "WRITE IT
DOWN"
200 INPUT  Z$
700 RAND USR 12800
800 LET MCADDR=32*1024-512-11
810 LET M=MCADDR
820 REM LD HL, $7E00
821 POKE M, 33

```

```

822 POKE M+1, 0
823 POKE M+2, 126
830 REM LD,C.$0
831 POKE M+3, 14
832 POKE M+4, 0
840 REM LD B, $0
841 POKE M+5, 6
842 POKE M+6, 0
850 REM CALL $3300
851 POKE M+7, 205
852 POKE M+8, 0
853 POKE M+9, 51
860 REM RET
861 POKE M+10, 201
900 DIM T$(256)
905 DIM A(512)
910 FOR N=1 TO 32
920 LET T$(33 TO 47)="?
?$$?,()*+,-./"
930 LET T$(48 TO
64)="0123456789:;<>?"
938 REM TYPE LINE BELOW THIS
939 REM IN INVERSE VIDEO
940 LET T$(65 TO
90)="abcdefghijklmnopqrstuvwxyZ"
950 LET T$(91 TO 96)="????----"
960 LET T$(97 TO
122)="ABCDEFGHIJKLMNopQRSTUVWXYZ"
970 FOR N=123 TO 256
980 LET T$(N)=" "
990 NEXT N
1000 FOR K=1 TO 40
1010 FOR S=1 TO 9
1015 IF S>9 THEN LET S=1
1020 CLS
1030 POKE (MCADDR+4), S
1040 POKE (MCADDR+6), K
1050 RAND USR MCADDR
1060 LET SSTRT+MCADDR+11
1070 LET SEND=SSTRT+512
1080 FOR N+SSTRT TO SEND
1085 IF N=SEND THEN GOTO 1160
1090 LET A=PEEK (N)
1100 LPRINT T$(A);
1110 NEXT N
1160 NEXT S
1170 NEXT K
1180 STOP

```

**Note:**

In line 1050, the listing of the program I have is "1050 RAN USR MCADDR" RAN could be either RAND or RUN but since USR usually follows RAND I selected that. Not having an AERCO TS-1000 disk drive interface that worked I could never try his program.

Donald S. Lambert

---

# the font

---

by Darko Stanicic

## ZXSpectrum.ttf V1.0 (International)

**T**he Font This font is based on the Sinclair ZX Spectrum ROM character set and it's 8x8 grid. It is released as healthware, which means that if you use it, you will live through a happy and joyful life. (Like the joke about milk - Why is milk healthy? If you drink it for 1200 months, you'll live for 100 years ;) No money, no postcards, no email, no fuss at all. Just use it for everything you want, sell it as your own work of art :) change it as you like, anything. But than again, if you ever print it in a magazine or do something useful with it, I'd love to see that... if it is no bother to you, send me a scan or just email to let me know - darone@sezampro.yu.

**T**he Story At first, I wanted to make only 110 original characters of the char set. Than I realized that I really \*needed\* our 10 national characters in it, and the rest was easy... ;) The Characters it supports several Unicode ranges (according to Microsoft Font Properties extension for Windows 95):

Basic Latin Latin-1

Supplement Latin Extended-A

Basic Greek Cyrillic

and more than a few Code pages

1252 Latin 1 1250 Latin 2:

East Europe 1251

Cyrillic 1253

Greek 1254

Turkish 1257

Windows Baltic

Windows OEM Character Set

869 IBM

Greek 866

MS-DOS

Russian 865

MS-DOS

Canadian French 861

MS-DOS Icelandic 860

MS-DOS Portuguese 857

MS-DOS IBM

Turkish 855

IBM Cyrillic;

Primarily Russian 852

Latin 2 775

MS-DOS Baltic 737

G 850 WE/Latin 1 437 US

I'm not very experienced in foreign characters and there's a big possibility that I made some of the chars ugly or mistaken, so if you notice something bad, some pixel missed or added or even a whole character wrong, please email me. (I didn't even proof test the font in the real world until now and I noticed that I don't like zcaron - one of the 10 chars that made me do the whole job! So there's certainly gonna be another version, but not very soon - say, with 10 or 20 chars to edit?)

**T**here are 652 glyphs in it, even ff, fl, ffi and ffl ligatures - everything I found around, and it is nowhere near kern (big thanks to Emigre, for inspiring my life and sending me free posters). There are no italic or bold versions so far, but I am thinking of the bold version (ROR, OR A, if anyone remembers... there will be some really cool characters in it!). Thanks I'd like to thank Bojan Stojanovic for some essential info on how to set up Fontographer, and Dragan Petrovic for digging my Spectrum cassettes out of the dust. I'd also like to thank Sir Clive Sinclair for creating the best computer ever (at least in my heart).  
Darone

long live spectrum!

---

## A Proposal for the Creation of a True Type Font for Documenting and Archiving of Sinclair Program Listing

David Solly

### THE PROBLEM

**A** few weeks ago one of my Timex/Sinclair utilities decided that it would no longer load so I found myself having to retype the program from a copy of the line-list. I was lucky to have made a hard copy using my Alphacom thermal printer, however, I went to fetch it I found -- to my horror -- that the paper had gone so dark that the listing was almost unreadable. The edges of the paper had turned brown and were beginning to crumble. The problem is that thermal paper, because of its high acid and metal content, is subject to a phenomenon known to archivists as "slow fire" which causes the paper to quite literally to burn up within only a few years. I realized that I would have to do something if I was to have any hope of preserving my line-lists.

### THE SOLUTION & SOME HISTORY

**T**he obvious solution to the problem would seem to be simply to reprint each line-list on acid-free paper using a full-sized printer. The catch is, however, that there are still the Hi-ASCII characters from character 128 to character 164, which represent the Sinclair block graphics and the user defined graphics (UDGs), to contend with. Most publishers during the heydays of the ZX Spectrum and Timex/Sinclair 2068 in the 1980s were content to publish photocopied images of the line-lists as they came from the Alphacom printer. Although this method created an accurate reproduction of any graphic characters in the program listing, the quality of the print which was either light or skewed to the left or right made reading and keying difficult. A few publishers opted to use set type

and substitute the graphic characters in the line-lists with "codes". These "codes" tended to be confusing and as difficult to read because there was no true one-to-one relationship between the "code" and the graphic character it represented.

### THE PROPOSAL

Today, it must be possible to create a suitable True Type font for the purpose of documenting and archiving Sinclair BASIC program line-lists. I have already tested a few "Sinclair" fonts that attempt to emulate the 8 by 8 pixel typeface one sees on the actual computer. These proved to be unsatisfactory for my needs mostly because the Sinclair Hi-ASCII graphic characters were not properly represented. What I would like to see is a full-fledged mono-space font with proper representation of the Sinclair Hi-ASCII.

My choice would be to base the font on OCR-A but any other clear mono-spaced font such as OCR-B or Lucia Consul would be suitable. The block graphics from character 128 to 143 can be represented as they are and

where they are in the ASCII sequence. I would add a border around each block graphic for the purpose of line-listing to make it easier to distinguish what each block graphic is. I don't see why the UDGs could not be represented by "A" through "U" enclosed in a box. This would signal that the character in question is a user defined graphic and indicate on which key it is found. As for what sections of the line-list that may be printed in inverse print, I don't see where that would be much of a problem with today's word processors. One could either "bold" or "highlight" these sections of the list. However, if an inversed character set were to be included in the package, that would be a definite bonus.

### THE CONCLUSION

I am hoping that someone here who has the skill and the software to create such a font might do so and make it available to all of us who have a need to document and archive his or her Sinclair (BASIC) program line-lists. Thank you kindly.

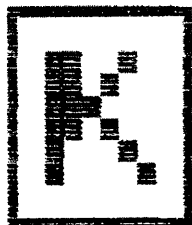
k\_david\_solly@hotmail.com

## Creating Your Own TS-2068 Character Set

One of the features that made me get my 2068 was the possibility of changing the character set. But, it didn't seem to be worth the trouble until I saw the special alphabet used in a program that was shown at a recent TUG meeting. As you can see in the listing of CHR\$, it is well worth it in better legibility, and it's prettier too.

I really enjoy making character sets with this program which can be used to make more than just one regular and one USR set by changing the values of S and T which are the beginning of the second character set and UDG set respectively.

After you type in the program and RUN it you can start out by copying the Sinclair character set and then changing it. Sets can also be saved as bytes for use in other programs. Line 6000 switches the computer back into the normal ROM characters while line 6010 puts the new ones into use.



arrow keys : 1 . 0 ENTER ESC: 4

```

700 GO SUB 950: LET H=S+8*(CHR-
32)
710 FOR I=1 TO 8: LET HH=PEEK (
H+I-1)
712 FOR J=1 TO 8
720 IF HH>=A(J) THEN LET HH=HH-
A(J): LET S$(I,J)=" "
730 NEXT J: NEXT I
790 GO TO 2000
950 DIM S$(8,8): FOR I=1 TO 8:
LET S$(I)="": NEXT I: RE
TURN
960 PRINT AT 14,12: FLASH 1:"
970 "": FOR I=0 TO 767: POKE (S
+I),PEEK (15616+I): NEXT I: LET
U=0: GO TO 1800
999 ON ERR RESET: OVER 0: BEEP
0.07,31: BEEP 0.07,26: PAPER 7:
INK 9: BRIGHT 0: BORDER 6: STOP
1810 PRINT AT Y+3,X+7;S$(Y,X): R
ETURN
1800 ON ERR RESET: BORDER 1: PA
PER 1: INK 9: CLS: POKE 23658,1
1810 PRINT AT 5,0: GO SUB 5500:
1820 PRINT AT 19,2:"":copy Sincl
air set """:stop":AT 21,4:"":1
oad CHR$: save CHR$
1840 DIM C$(1): INPUT ;TAB 10;"C
HARACTER?":C$
1842 IF C$="" THEN GO TO 7000
1844 IF C$="" THEN IF U=1 THEN
GO TO 960
1846 IF C$="" THEN GO TO 7100
1848 IF C$="" THEN COPY
1850 IF C$="" OR C$="" THEN GO
TO 999
1860 LET CHR=CODE C$
1870 IF CHR>143 AND CHR<165 THEN
GO TO 680
1880 IF CHR>32 AND CHR<127 THEN
GO TO 700
1900 GO TO 1800
2000 OVER 0: BORDER 6: PAPER 5:
BRIGHT 0: CLS: INK 9: PAPER 8:
PRINT AT 2,7:"":FOR T

```

The character editor routine is entered by pressing a character you wish to change. While in the edit mode, use the arrow keys to move the dots around. Press 1 to plot, press 0 to unplot, press 4 to return to the menu, and press enter to POKE the new character.

I don't think you will ever be content with just the old alphabet again.

-- John Monkus

```

10 REM CHR$
20 REM 6-26-85
22 REM JOHN MONKUS
30 DIM A(8): RESTORE : FOR I=1
TO 8: READ A(I): NEXT I
32 DATA 128,64,32,16,8,4,2,1
40 LET S=64600: LET T=65000: L
ET U=1
100 GO TO 1700
600 GO SUB 950: LET H=T+8*(CHR-
144): GO TO 710

```

```

7030 POKE 23624,41: DIM T$(10):
INPUT "10 CHR$ max (4=ESC)":U$:
IF U$="4" THEN GO TO 1800
7032 IF U$="" THEN LET T$="" CH
R$: GO TO 7035
7034 LET T$=U$
7036 FOR I=1 TO 10: IF CODE T$(I
)<>32 AND CODE T$(I)>47 AND CODE
T$(I)<58 THEN GO TO 7010
7038 NEXT I
7044 LET J=65536-S
7050 SAVE T$CODE S,J
7060 LET R=1800: ON ERR GO TO 79
50: PRINT AT 9,0:"": FLASH
1:"REWIND TAPE TO VERIFY": FLAS
H 0:"": AT 11,10:""
: AT 11,11: PAPER 8: INK 8: 0
VER 1:T$
7070 PRINT AT 19,0: VERIFY ""CO
DE: GO TO 1800
7099 STOP
7100 REM CHR$
7110 PAPER 2: INK 6: BORDER 2: C
LS
7120 PRINT AT 9,4: FLASH 1:"STAR
T TAPE TO LOAD STATES"
7130 LET R=1800: ON ERR GO TO 79
50
7140 PRINT AT 16,0: LOAD ""CODE

```

```

PRINT AT 3,7:"" FOR I
=1 TO 8: PRINT AT I+3,7:"": PAF
ER 7:5$(I): PAPER 8:"": NEXT I:
PRINT AT 12,7:""
2010 POKE 23658,8: GO SUB 3800:
GO SUB 5000
2200 PRINT AT 14,0: PAPER 6:"":
PW KEYS =:1 "": PAPER 7:"": PAPE
R 6:"": ENTER ESC:4 "": LET X=
4: LET Y=1
2210 PRINT AT Y+3,X+7: WRIGHT 1:
INVERSE 1:5$(Y,X)
2230 IF INKEY$="5" THEN : IF X<1
THEN GO SUB 1000: LET X=X-1:
2240 IF INKEY$="8" THEN : IF X<8
THEN GO SUB 1000: LET X=X+1:
2250 IF INKEY$="7" THEN : IF Y<1
THEN GO SUB 1000: LET Y=Y-1:
2260 IF INKEY$="6" THEN : IF Y<8
THEN GO SUB 1000: LET Y=Y+1
2300 IF INKEY$="0" THEN : BEEP 0
,02,44: LET 5$(Y,X)="": PRINT A
T Y+3,X+7:5$(Y,X): GO SUB 3800:
PLOT INVERSE 1:171+X,88-Y: PLOT
187+X,88-Y

```

```

7150 GO TO 1800
7199 STOP
7950 PRINT #1: AT 0,7: FLASH 1:"
23658=23658" : AT 1,2: FLASH
0:" press any key to continue "
: PAUSE 4E4
7960 ON ERR RESET : GO TO R
8999 STOP
9000 REM CHR$
9005 POKE 23658,8: POKE 23675,88
: POKE 23676,255
9010 CLS : PRINT AT 9,8: FLASH 1
:"GO NOT STOP TAPE"
9020 LOAD ""CODE
9030 GO TO 1800
9998 STOP
9999 PAPER 8: INK 9: PRINT AT 20
,0: SAVE "CHR$" LINE 9000: SAVE
"" CHR$"CODE 64600,936: VERIF
"CHR$: PRINT AT 20,0: VERIFY "
CHR$"CODE

```

## EMULATORS

Warajevo

[ [PC/DOS](#) | [PC/Windows](#) | [Unix](#) | [Amiga](#) | [Macintosh](#) | [Acorn](#) | [Psion 3](#) | [Psion 5](#) | [Windows CE](#) | [Playstation](#) | [Dreamcast](#) | [Atari](#) | [BeOS](#) | [TI89](#) | [TI92](#) | ]

For all emulators (on all platforms), have a look in the [emulators](#) directory of the archive.

[www.void.jump.org/emulators](http://www.void.jump.org/emulators)

The following emulators can be had directly:

**PC/DOS** (several supported by [SGD](#)):

Notice that, although the emulators are written for DOS, they will run in a DOS-box in Windows as well.

**Z80** version 4.00 (shareware) by Gerton Lunter (1,073,457 bytes)

This archive contains versions for both DOS and

Windows 3.1/95/98/NT [16/03/99]

**JPP** (no longer updated) by Arnt Gulbrandsen (270,043 bytes) [30/09/97]

**Warajevo ZX Spectrum Emulator** version 2.51 by [Zeljko Juric](#) and [Samir Ribic](#) (797,442 bytes)

This emulator can handle the TZX file format! [21/12/98]

**X128 Soundblaster** (169,918 bytes), or **X128 Adlib** (167,909 bytes) version 0.93 by James McKay

You will need the [ROMS](#) (204,075 bytes) and [DOS/4GW](#) (144,016 bytes) to run it.

This emulator can handle the TZX file format! [06/11/98]

**M.E.S.S** version 0.36b officially from [The MESS Home Page](#) (1,071,356 bytes)  
Emulates all Sinclair machines (including ZX80/ZX81) plus lots of other machines (such as the CPC, MSX or C64 ranges)

It runs on nearly every OS - the download above is the PC version. [22/05/00]

**Spectrum** version 0.99F by Pedro Gimeno (74,186 bytes) [26/07/98]

**Spec** version 1.4w by [Robin Edwards](#) (110,145 bytes)

**SpecX** version 1.12 (191,942 bytes)

This shareware version runs under Windows 95/NT and uses DirectX 5.0. [09/06/99]

**R80** version 0.30 by [Raúl Gómez Sánchez](#) (454,160 bytes)

This emulator can handle the TZX file format and supports both the .DAT and .POK files created by SGI! [09/03/00]

**Spectre** beta version 0.04 by [Johan Andersson](#) (138,676 bytes) [26/05/99]

**Z80Stealth Spectrum emulator** version 0.452 by [Kolpakov Kirill](#) (418,192 bytes) [23/04/01]

**Spec256** version 1.2 by [Iñigo Ayo](#) and [David Goti](#) (108,187 bytes)

Emulates a Speccy with the added option to use 256 colours in stead of 16!

Games must be adjusted for this. Such adjusted titles can be had from the Download page at the [Spec256 home](#). [17/09/99]

**FINSPE** version 1.41 by [Jussi Lähteenmäki](#) (36,473 bytes) [10/12/00]

**JASPE** version 000118 beta by [Julio Fernández Pérez](#) (110,405 bytes)

There is a [Spanish](#) version available as well (111,515 bytes). [20/01/01]

**ZXSpectr** version 3.0 by [Cesar Hernandez Bano](#) (1,096,329 bytes)

The [source code](#) is available as well (413,339 bytes). [31/12/99]

**YaSE** version 0.8a by [Christian Hackbart](#) (426,295 bytes) [06/10/00]

**RealSpectrum** beta release 10, version 0.80.22 by [Ramsoft](#)

This is an emulator with accuracy never seen before! This emulator can handle the TZX file format (both read and write!) and supports the .POK files created by SGI!

It comes in several versions, optimised for the several processor types:

**AMD version** (AMD K6, K6/2, K6-III and Athlon; 487,259 bytes),

**Pentium II version (i686)** (Intel Pentium Pro, Pentium II, Pentium III and Celeron; 483,325 bytes) and

**Pentium version** (Intel Pentium and Pentium MMX processors only; 494,052 bytes) [27/03/01]

You will also require the [ROM files](#) (208,159 bytes)

The documentation for this emulator is available on-line, in both [English](#) and [Italian](#).

**Sinbas** version 1.3 by [Pavel Napravnik](#) (181,207 bytes)

Not strictly an emulator, but a Spectrum BASIC

interpreter! [26/06/00]

## PCWindows

The following emulators require MS Windows.

**Z80** version 4.00 (shareware) by [Gerton Lunter](#) (1,073,457 bytes)

This archive contains versions for both DOS and Windows 3.1/95/98/NT [16/03/99]

**ZX-32** version 1.03a by [Vaggelis Kapartzianis](#) (1,438,591 bytes)

Get the [latest patch](#) (v1.03.98.0211, 242,959 bytes)

Get the [latest beta](#) (v2.00.04.04, 260,646 bytes) [05/04/00]

This emulator can handle the TZX file format!

It runs under MS Windows 95/NT. [15/12/97]

**Multi-Machine** version 1.30b by [Paul Hodgson](#) (1,167,905 bytes)

Emulates all Sinclair machines (including ZX80/ZX81) plus lots of other machines (such as the CPC, Tandy or MSX ranges)

This emulator can handle the TZX file format!

It runs under MS Windows 95 and requires DirectX 5.0. [18/06/98]

**ZX Plus** version 0.23 by [Mark Swinhoe](#) and [Justin Wood](#) (163,877 bytes)

This emulator runs under Windows 95/NT and uses DirectX 7.0. [13/11/99]

**ZX** version 0.51 beta by [Daniele Orro](#) (151,021 bytes)

This Windows emulator is also available in its native Italian. (152,687 bytes) [20/06/99]

**Speccyal** version 0.72b by [Stéphane Schmitz](#) (155,915 bytes)

This emulator runs under Windows 95/NT and uses DirectX 5.0. [12/03/00]

**vbSpec** version 1.20 by [Chris Cowley](#) (2,347,225 bytes)

This emulator has been entirely written in Visual Basic and is quite useable - a feat never done before! [15/05/00]

**SEM** version 0.33 by [Alexander Patrakov](#) (577,293 bytes)

Available for Windows 95/98/NT/2000 [15/11/00]

A [patch](#) was released that corrects problems with sound on old cards (1,978 bytes) [25/12/00]

**GLECK** version 0.04 by [Ignacio Burgueño](#) (375,596 bytes), previously just named Spectrum Emulator.

This emulator can handle the TZX and POK file formats!

It runs under Windows 95 and up and uses DirectX.

Both English and Spanish versions are available in the package. [03/05/01]

**Spectrum 128K** version 3.05 by [Nikolay Shalaev](#) (196,356 bytes) [31/03/99]

Supports .TRD/.Z80/.SNA/.SLT/.TAP and comes with English documentation file (thanks to Mac Duster) and additional loaders in the package.

More [additional loaders](#) are available as well.

Also available is a [patch](#) that translates the entire interface to English. [14/05/00]

The [full source](#) is available too.

**ZX-Emul** version 0.34 by [Vladimir Yudin](#) (143,111 bytes) [15/11/99]

Supports .TRD/.Z80/.SNA/.FDI

The documentation has been translated to English by Evgeny Barsky.

Grimalovsky Alexander wrote a config editor for the emulator. (50,876 bytes) [27/11/99]

UKV version 1.2 fix#5 by Max Vasilyev (based on the original v1.2 from K. Uglekov) (140,039 bytes) [05/06/00]

Supports .Z80/.SNA/.TAP/.FDI and comes with a program to convert between .FDI and .TRD images  
The documentation has been translated to English by Andy Schraepel. Unix

XZX version 3.0.1 (shareware) by Erik Kunze (396,280 bytes) [20/12/00]

Needs the Contrib file (v2.8.1, 291,222 bytes) [03/02/01]

This emulator can handle the TZX file format!  
Erik also has RPM and SRPM versions of this emulator available on his site.

The package also contains utilities to work with TR-DOS file images.

XZ80 version 0.1d by Ian Collier (93,703 bytes) [30/09/97]

Spectemu version 0.94 by Miklos Szeredi (188,901 bytes)

There are also pre-compiled versions available for Linux (230,733 bytes) and Solaris 2.5 (SPARC) (184,934 bytes).

This emulator can handle the TZX file format! [22/06/97]

Fuse version 0.3.0 by Philip Kendall (178,452 bytes) [31/01/01]

ZXSP version 0.4.2 by Günter Woigk (159,700 bytes)  
Requires an X11 setup with OSS for sound.

This is the source code distribution. Available as well is the binary distribution version 0.7.1 which also requires the QT library (eg. for KDE desktop) (419,277 bytes) [28/06/00]

### Amiga

KGB version 1.3 by KGB support BBS (34,454 bytes) [30/09/97]

Spectrum version 1.7 by Peter McGavin (167,303 bytes) [30/09/97]

ZXAM version 2.0 by Toni Pomar (515,634 bytes) [30/09/97]

ZX-Spectrum version 4.71 by Jeroen Kwast (187,756 bytes) [30/09/97]

Spectrum 128K emulator version 0.2 by Alberto Ordóñez (103,333 bytes) [24/03/99]

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It emulates a ZX-Spectrum 128K and TR-DOS file system.

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ASp version 0.79 by Ian Greenway (145,941 bytes)

Comes with completely accurate speed, excellent sound and full multitasking!

With fast 128K bank switching!

Supports Retargettable (RTG) displays and rainbow graphics [16/04/01] Macintosh

[28/06/00]

ZXSP version 0.1.8 by Günter Woigk (675,546 bytes)

This emulator is available in Linux flavour as well. [28/06/00]

PowerSpectrum version 1.0 by Bo Lindbergh (69,248 bytes) [30/09/97]

### Macintosh

MacSpectacle version 1.9.7 by Günter Woigk (414,755 bytes) [28/06/00]

Also uses ZX Loader He made full source code (v1.9.2) available as well. [28/06/00]

ZXSP version 0.1.8 by Günter Woigk (675,548 bytes)

This emulator is available in Linux flavour as well. [28/06/00]

PowerSpectrum version 1.0 by Bo Lindbergh (69,248 bytes) [30/09/97]

### Acorn RISC OS

Z80Em version 1.2 (shareware) by Warm Silence Software (56,458 bytes) [30/01/98]

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Speculator version 0.9b by Gabriele Roncolato (392,120 bytes) [22/06/98]

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BeZX, a port of XZX v2.0.4, by Jens Kilian (469,360 bytes) [25/01/99]

Beccy development preview release, by Max Gontcharov (74,805 bytes) [24/09/00]

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Tezxas v2.2, by Samir Ribic (205,647 bytes) [18/11/00]

### TI92 Plus

Tezxas v2.2, by Samir Ribic (187,390 bytes) [18/11/00]



# The Z88 Source Book

## INTRODUCTION

The Z88 Source Book is designed to be a good reference on the Z88, how to interface it with the world, how to do things with it, what products are/were available, and what dealers carry them. It is not designed to be a replacement for the Z88 User Guide, but as a supplement to it, filling in areas not covered by the User Guide.

This Source Book also comes with a number of utilities and files for the Z88 on QL or MS-DOS disks. Although the Z88 can interface with any computer with a serial port, these are two that I have chosen to focus on. Those who have interfaced the Z88 with other computers can submit the details so that they may be added to this book. All utilities that come with this book are either Shareware, Freeware, or Public Domain and may be freely distributed.

The reason for this book comes from when I was a new Z88 owner and did not know how to get it to interface with any computers. I initially got some help from Dave Bennett, but still had to fumble a bit in the dark. The Z88 documentation assumes that one purchased the QLink, PC-Link, or Mac-Link software and cable and does not discuss the ways to transfer files to another computer. From my initial lack of knowledge came the idea for a Source Book to assist new (and old) Z88 users, including utilities to help.

This book relies heavily on the work of others and their exploration of the Z88. A lot of the information in this book comes from a variety of publications and people. I am indebted to both Dave Bennett and Frank Davis for providing the back issues of various newsletters. Below is a list of publications and persons from which/whom this book is indebted.

Update Magazine, Z88 Fax News, PipeLine, Z88 EPROM, Dave Bennett, Frank Davis, Phil Wheeler, Chris Fenn, and other contributors of Z88 articles to the various newsletters.

Throughout this book I will reference various parts by their Radio Shack Part Number. I'm doing this not because I favor Radio Shack, but because Radio Shack is everywhere and the part number references a specific item. One last item, if you have not read the Z88 Manual all the way through, then I recommend it. In the tradition of other Sinclair documentation, the manual is full of good information, but it's hiding. A cursory reading of the manual will not reveal all of the neat tricks the Z88 can do.

## CONVENTIONS

There are a number of keys on the Z88 that are not on other computers. Below is the convention of how they will be used in this book:

- [ ] - Square Key
- <> - Diamond Key

## HISTORY

The Z88 started off as the "Pandora" project when Sir Clive Sinclair sold off Sinclair Research Ltd. to Amstrad.

It was first introduced in England in June of 1987. It

was sometime in 1988 that the Z88 was introduced in the US, being sold by Cambridge North America. The market life of the Z88 was rather limited. After coming on strong in 1988, a number of vendors and magazines started folding around 1990. The official Z88 magazine, "Z88 User", folded in 1989 after publishing for a year. Cambridge North America folded in 1990 after some rather complicated legal dealings.

When the Z88 was introduced to the US, the reviews in computer magazines seemed to be fairly polarized. Either the reviewer loved the Z88 (like Stan Veit) or wrote it off completely. Most reviewers cited the fact that the Z88 was not MS-DOS compatible as being a large reason why it would not sell. Despite the reviews, the Z88 did sell fairly well to Macintosh users, who did not care about it not being MS-DOS compatible, and were used to paying the high price that some dealers were selling the Z88 for.

## PIPEDREAM TIPS

### Multiple Columns

Change the width of Column A with <>W to 40. Set a right margin of 38 with <>H. Goto Options with <>O. Set justify to Y. Set the page length to what you want. Set Header, Footer, and Bottom to 0 and Left to 2.

Editing is more difficult with multiple columns, so 99% of the editing is done with the text in column A. Any insertions and deletions of lines of text must use the commands <>EIRC and <>EDRC. <>N and the <>Y insert and delete in ALL columns.

Now you are going to separate and move your text into column B. There will be a jagged line across the column where you previously set the page length. Now move the cursor one line past this marker. Type <>Z and then move to the end of the text with <> and Down Arrow. Type <>Z again. All the selected text will be highlighted on the screen.

Press TAB to move your cursor to Column B and use the arrow keys to put the cursor where you want the moved text to start. Now type <>BM for Block Move. Your selected text will be moved to your cursor position.

## BBC BASIC TIPS

The Z88 Manual is very terse on how to program in BBC Basic. It discusses the commands, functions, and operators of the language, but does not cover how to put these together to construct a program. For the experienced Basic programmer BBC Basic should be fairly familiar. For the novice, it is a more daunting task to put together a program.

A full discussion of how to write a BBC Basic program is far beyond the scope of this book. One way to learn BBC Basic is to go over the Basic programs included with the Source Book. They should provide you with a fairly good set of examples of how to do various tasks in BBC Basic. There are a few books on BBC Basic:

"Using BBC Basic", P.J. Cockerell, 1983, John Wiley and Sons (ISBN

047190242X).

"BASIC Programming on the BBC Microcomputer", Neil

& Pat Cryer, 1982, Prentice Hall.

### **"BBC Basic Reference Manual for the Z88", D.J. Mounter**

The first two books were designed for the BBC Micro and some portions of the text will not apply to the Z88 version of BBC Basic. They are good starting points for the novice programmer. Optionally, a novice programmer could pick up a book on general Basic and translate the examples to BBC Basic.

## **Star Commands**

There are some commands that are not documented in the Z88 User Manual that are covered in other Books.

\*CLI - Execute CLI Commands.

10 \*CLI #F - invokes the Filer.

\*DELETE - Delete Files.

10 \*DELETE pd/file - Deletes file in the pd subdirectory.

\*ERASE - Same as \*DELETE.

\*REANME - Renames a file. Execute it just like \*DELETE.

\*NAME - Assigns a name to a BASIC program.

## **The VDU Command**

A number of less documented features of BBC Basic are accessed via the VDU command. The VDU command is almost equivalent to the CHR\$(X) command. VDU X = CHR\$(X). Using the command VDU 65 will print out the A character (A = ASCII 65). The ASCII codes from 0-31 and 127 will perform special tasks with the VDU command. Not all of these VDU commands are documented.

Some of the VDU commands are documented in the BBC Basic book by P.J. Cockerell. Most do not apply to the Z88 since they are graphics commands. One is completely different than that used on the Z88. The following VDU commands are not used on the Z88.

VDU 17 Color Control

VDU 19 Actual color to logical color

VDU 22 MODE Command

VDU 23 Create User Defined Characters  
(see below)

VDU 26 Restore Default Windows

VDU 28 Define Text or Scrolling Window

VDU 30 HOME the Cursor

VDU 31,x,y TAB(x,y)

The following subsections document the known Z88 VDU commands.

This includes screen controls, sound, and user defined graphics.

## **Screen Control Codes**

The Z88 has a number of codes that are used to control the screen and to print special characters (ones not on the keyboard). Remember VDU X is the same as CHR\$(X).

VDU 8	Move cursor Left
VDU 9	Move cursor Right
VDU 10	Move cursor Down
VDU 11	Move cursor Up
VDU 1,32	Three Dots
VDU 1,33	Bell Symbol
VDU 1,39	Backwards Apostrophe
VDU 1,42	Square
VDU 1,43	Diamond

VDU 1,45	Shift Symbol
VDU 1,124	Upright Slash
VDU 1,142	Block
VDU 1,224	Space Symbol
VDU 1,225	Enter Symbol
VDU 1,226	Tab Symbol
VDU 1,227	Delete Symbol
VDU 1,228	ESC Symbol
VDU 1,229	Menu Symbol
VDU 1,230	Index Symbol
VDU 1,231	Help Symbol
VDU 1,240	Left Key Arrow
VDU 1,241	Right Key Arrow
VDU 1,242	Down Key Arrow
VDU 1,243	Up Key Arrow
VDU 1,244	Thick Left Arrow
VDU 1,245	Thick Right Arrow
VDU 1,246	Thick Down Arrow
VDU 1,247	Thick Up Arrow
VDU 1,248	Thin Left Arrow
VDU 1,249	Thin Right Arrow
VDU 1,250	Thin Down Arrow
VDU 1,251	Thin Up Arrow

VDU 1,ASC("B")	Bold Characters
VDU 1,ASC("C")	Toggles Cursor
VDU 1,ASC("D")	Slows the Display
VDU 1,ASC("F")	Flash Characters
VDU 1,ASC("G")	Bright Characters
VDU 1,ASC("R")	Inverts the Screen
VDU 1,ASC("S")	Screen Scrolls from Top to Bottom
VDU 1,ASC("T")	Small Characters
VDU 1,ASC("U")	Underlines Characters

## **Key Codes**

Sometimes it is necessary to know the codes that keys generate. To find out what codes a key press generates, enter the following program:

```
10 PRINT "Hit Key or Combination";
20 Z$ = GET$
30 PRINT Z$,ASC(Z$)
40 GOTO 20
```

The Diamond <> Key acts like a CTRL key.

Key	Alone	Shift Key	Ctrl Key <>
UP	0, 255	0, 251	0, 247
DN	0, 254	0, 250	0, 246
RT	0, 253	0, 249	0, 245
LT	0, 252	0, 248	0, 244

Other interesting codes:

CTRL TAB	0, 194
CTRL DEL	0, 195
CTRL \	28
CTRL =	0, 0
CTRL -	31
CTRL ]	29
CTRL `	96
CTRL [	27
CTRL ENTER	0, 193

## **Line Graphics**

The Z88 is capable of producing "IBM style" line graphics. These are generated by VDU commands in the following form:

```
VDU 1,ASC("2"),ASC("*"),ASC("char")
```

where char is a letter in the range A to O.

Here is an example program:

```
10 Z=65
20 REPEAT
30 VDU 1,ASC("2"),ASC("*"),Z
40 VDU 9
50 Z=Z+1
60 UNTIL Z=80
```

## Sound

The Z88 is capable of limited sound. Variations can be made of the Z88's beep. Below are three examples to experiment with:

```
VDU 1,52,33,38,34,34
VDU 1,52,33,34,33,34
VDU 1,52,33,40,33,33
```

## User Defined Characters

The Z88 has the ability to have up to 64 user defined characters. Characters can be defined from CHR\$(64), the @ symbol, to CHR\$(127), ESC. They are defined in the following format:

### VDU

**1,138,ASC"=",ASC"char",n0,n1,n2,n3,n4,n5,n6,n7**  
where char is the ASCII character that this new character is assigned to. n0 through n7 are the decimal equivalents to the binary code defining the character.

The characters are defined in a 6 column by 8 row matrix. The rows are defined by the numbers n1 to n7 in downward sequence (n7 is the bottom row) and the columns are defined by the six lower bits of the binary form of these numbers (bit 0 is the right-most bit). It appears that the setting of the two highest bits is not important.

Here is an example of a Smiley Face character:

Binary	Decimal	
0 0 0 1 1 0 1 1	27	<-- n0
0 0 0 1 1 0 1 1	27	
0 0 0 0 0 0 0 0	0	
0 0 0 0 0 1 0 0	4	
0 0 0 0 0 1 0 0	4	
0 0 0 1 0 0 0 1	17	
0 0 0 0 1 1 1 0	14	
0 0 0 0 0 0 0 0	0	<-- n7

|  
|-- Blank Column for space between characters

## Printing HEX Values

Using a tilde (~) with the ASC command in a print statement will print out the HEX value of the character being operated on. ~ASC"A" will print out the HEX value of the character A (41). ASC"A" is 65.

```
PRINT "A",ASC"A",~ASC"A"
```

will produce: A 65 41

## BASIC Inline Assembler

BBC BASIC on the Z88 comes with an inline assembler built in. The variable P% is used as a program counter. The user must set P% to the desired start point for the machine code before invoking the assembler. The assembler can be invoked with the [ symbol on a single line. It is uninvoked by a ] on a single line. Below is a sample program:

```
10 DIM code 100
20 P% = code
30 [
40 LD BC,50
50 RET
60 ]
```

It is recommended that the user have a good knowledge of Z80 machine code programming before trying the assembler. Locking up your Z88 could cause it to do a hard reset (take it to a "virginal" blank state).

### A Hint on the OPENUP Command

The command OPENUP (OPEN for UPdate) is a little odd on the Z88.

The typical syntax might be:

```
10 F% = OPENUP(F$)
20 PRINT #F%,G$
```

But this will result in the current contents of F\$ being overwritten, not appended. To OPEN for APPEND, you need to move the file pointer to the end of the file:

```
10 F% = OPENUP(F$)
20 PTR #F%=EXT #F%
30 PRINT #F%,G$
```

This will add G\$ at the end of the file, instead of overwriting the existing contents.

### Reading the Serial Port

Here is a short BASIC routine that demonstrates how to read the serial port.

```
10 channel% = OPENIN("COM.0")
20 BPUT# channel%,outputbyte%- set byte
30 inputbyte%=BGET# channel% -read byte
```

## Testing the Speed of the Z88 in Basic

Benchmark speed tests are standard ways of comparing different computers in relation with each other. I have converted one benchmark program from the QL to the Z88. It's a fairly simple prime number calculating program, originally written by Duane Parker to test out different compilers and languages on the QL. I use it here to compare the Z88 with the QL.

The QL is known for having a slow display. I ran the benchmark on both computers with the output of the program being displayed and not displayed. The key thing I found out from this test is that the Z88 does not suffer a slow down when outputting information to the display. The results for the Z88 were the same on both runs.

The benchmark determines all of the prime numbers from 32767 to X, where X is less than 32767 and greater than 0. In the benchmark tests that I ran, I had the program determine the primes from 32767 to 29000. These were the same numbers used in earlier tests with the benchmark. Using the fastest Z88 and QL times, the Z88 ran the benchmark in 326 seconds and the QL in 229 seconds.

This means that the QL is 1.4 times faster than the Z88. Considering that the QL is running a 68008 at 7

MHz and the Z88 is using a Z80 at 3 MHz, the Z88 does fairly well.

The program is as follows:

```

10 PRINT "Stop Calculations at what
    value less than 32767?"
20 INPUT V
30 P = 32767 DIV 100
40 IF V>32767 OR V<0 THEN PRINT
  "INVALID": GOTO 10
50 PRINT "Primes < 32767 & > ";V
60 A$ = TIME$
70 FOR I = 32767 TO V STEP -2
80   FOR J = 3 TO 191 STEP 2
90     IF (I MOD J) = 0 THEN GOTO 140
95   NEXT J
100  IF (I<P*100) THEN PRINT : P=P-1
110  PRINT I;" ";
140 NEXT I
150 B$ = TIME$
160 PRINT A$
170 PRINT B$

```

## CABLES

The serial port is the primary way to get data into and out of the Z88. Below are cable diagrams for linking a number of computers, a modem, and a printer.

### Cable Making Hints

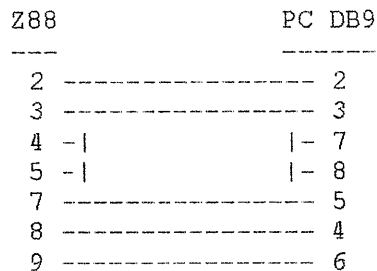
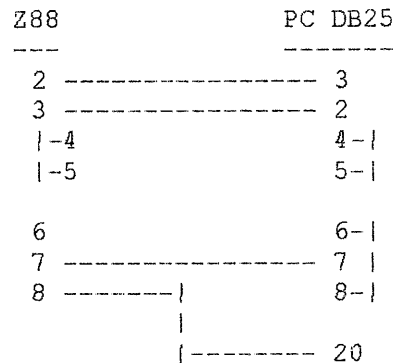
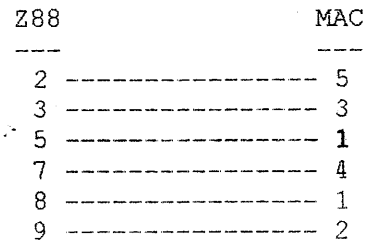
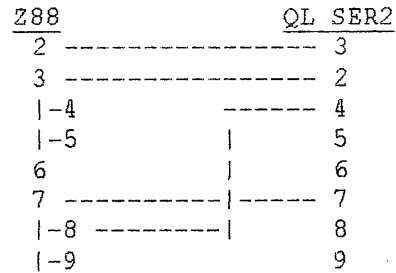
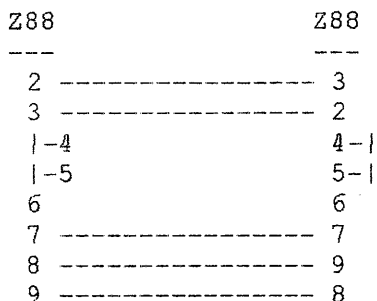
I have found through experience that a cable may not turn out the way I feel it should. When I first made my Z88 cables, I used standard 9 wire cable ( about 3/8" wide). This was what I expected a cable to look like. Well, after using them for a few years, I found the cable too thick and unyielding to use.

After some thinking, I remembered some serial cables that were built with phone wire. Phone wire is flexible and easy to use. Since I had a few extra phone cords running around, I snipped off the RJ-11 jacks and soldered some 9-pin D ends and away I went.

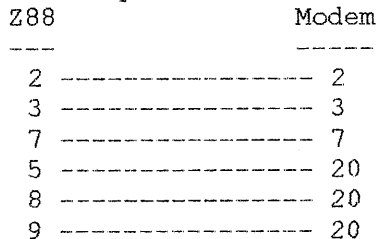
Phone cable comes in 4- (RJ-11), 6-, and 8-wire (RJ-45). For connections to other computers, I found 4 wire to be fine. For a printer or modem cable, you will need either 6- or 8-wire, which may be harder to find.

Also, make your cables plenty long. I thought I had made mine long enough, but I found out how wrong I was when I went to use them. The distance from the back of your computer to a space right next to it (for the Z88) is longer than you think. Be on the safe side and make them long.

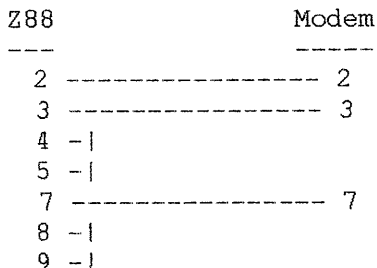
### Cable Diagrams



Another way to do it is to use the DB25 cable and a 25 pin to 9 pin adapter (on the PC end). These adapters are easy to find at most computer stores.



Here is an alternative modem connection.



To be continued

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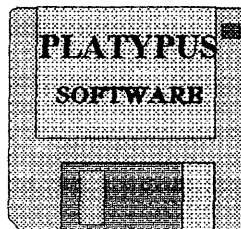
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Mostly QL & TS-2068

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Mostly ZX-81/TS-1000 & TS-2068

## QL TS-2068 ZX-81 Software

# T/SNUG

# Get Together ?

Just thought I would add something that you could put in the next edition of ZQA! I have been in contact with a few members of the club that live out here on the "left coast", and we all came to the agreement that it would be great if we could try to have a get together of Timex/Sinclair users. I was thinking that it would be great if possibly one day we could have a T/SNUG get together, but for the time being I was trying to gauge the interest of people who live on the west coast or beyond who would be interested in participating in a get-together in the Bay area. Maybe you could just post this in the next edition and whomever was interested could reach me and let me know.

Also, my address has changed so I will give you that for any updates you need to make. take care,

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